

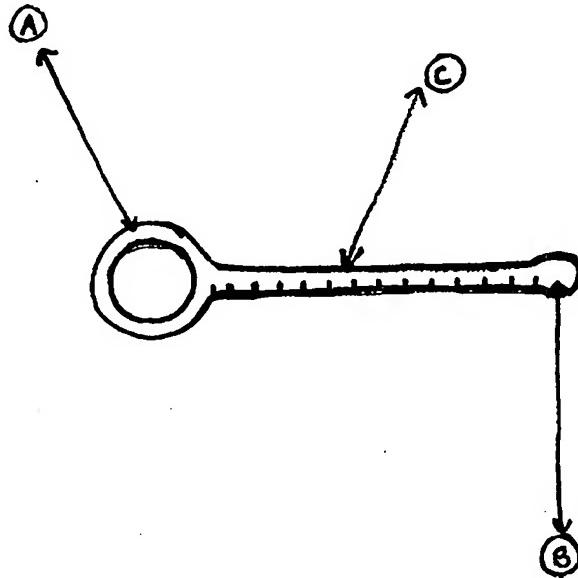
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## (54) Device for indicating adequate defrosting of poultry

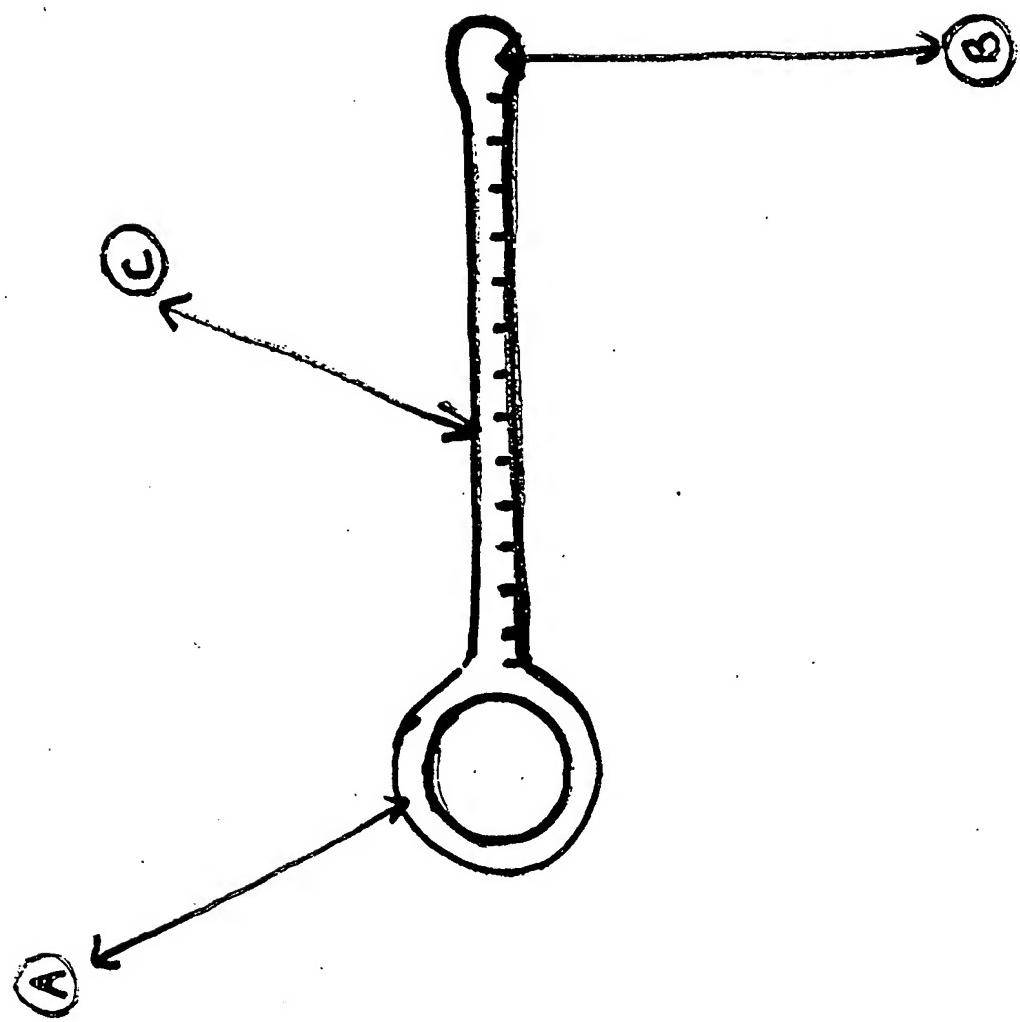
(57) A device for indicating whether an item of frozen poultry has been adequately defrosted prior to cooking, comprises an elongate thermochromic probe which is inserted into the intestinal cavity of the item of poultry before it is frozen. The probe may be moulded from a polymer or monomer containing a dominant base pigment and thermochromic pigments, and have graduations along its length to indicate partial defrosting. The probe may be made of metal coated with pigments. The colour change occurs at between 5 and 7 degrees C.



GB 2 318 870 A

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THIS INVENTION RELATES TO A DEFROST TEMPERATURE INDICATOR DEVICE FOR FROZEN WHOLE POULTRY BIRDS.

Poultry defrost indicators are known for their ability to respond visually to a change in temperature from below - 0 degrees C To 0+ Degrees C. These indicators according to trade research appear to take the format of electronic thermal sensor devices and conventional chemical thermometers. The former device, currently used commercially but according to research utilised in few domestic kitchens is called the electronic Prod thermometer. This said Prod thermometer consists of a metallic pointed rod type thermal sensor attached to an electronic temperature readout meter.

This Prod can be pushed into the body of an item of poultry prior to cooking and a temperature measurement can be taken of a target region of the said poultry item to confirm a full defrostation has taken place. This measurement prevents a partially defrosted poultry bird entering a conventional or microwave oven for a standard specified temperature weight time ratio cooking period and appearing fully cooked prior to human consumption though remaining below the required temperature centrally throughout the cooking process to kill off health damaging salmonella bacteria, compounding the original defrostation problem as a partial defrost prior to an incorrect cooking process actually increases the population of the said bacteria. There is an urgent need for a more convenient method of taking a temperature reading of poultry and freely available with all frozen poultry birds purchased and reducing the risk of salmonella poisoning.

According to the present invention when poultry is ready for processing and internal organs removed including intestinal sacks prior to packaging and freezing, a high percentage of poultry still remain contaminated by cultures of salmonella bacteria adhering to the cavity walls of the removed intestinal sack. Prior to the preservation by deep freezing of each processed complete item of poultry, a polymer or metal indicator device is inserted up the anal canal to the intestinal cavity area. This indicator device remains with each item of poultry throughout the distribution chain beyond point of sale and to the kitchen but is to be removed for checking after the required defrostation time has elapsed prior to cooking. According to the present invention a polymer or metal device may be equally graduated by visual surface markings along its stem (SEE FIG.C) into portions representing relative defrostation times by colour indication.

The said polymer defrostation indicator device would contain two or more pigments within the injection moulding process of which one would be a permanent base pigment, to dominate the colour of the device on complete defrostation and additional temperature activated thermochromic pigments would be selected for actioning at specific target temperatures to reveal by distinct colours relative to level of defrostation confirming complete defrostation has actually not occurred. Should this be the case and only a partial defrostation has actually taken place then according to this invention the device will visually reveal only a partial change in colour along its stem length from the poultry inserted end relative to the depth of defrostation within the complete item of poultry providing a helpful guide to time remaining for complete defrostation to take place at the previously selected defrostation temperature prior to cooking. In the case of a metal variation of the said device then the above mentioned pigments will be applied

at the time of manufacture as surface coatings providing an identical device application to its polymer variation. According to this invention individual devices (FIG 1) will be inserted at point (SEE FIG. 1/B) into all complete poultry items at the time of processing by manufacturers and prior to preservation by freezing. These devices shall remain in place through retail distribution and to the point of purchase and beyond to the point of final defrostation and after the recommended period of defrostation removed by the use of the finger tag (SEE FIG. 1/A) to be viewed for confirmation and guidance of actual level of defrostation prior to cooking and consumption. The said poultry defrost indicator devices will be relatively low in unit cost and will solve a need for safe poultry defrostation. Frozen poultry suppliers would then have the opportunity to provide to their end of chain consumers a simple and convenient method for each consumer to check the defrostation level of each complete poultry bird purchased or supplied. According to this invention other non toxic non fragmenting materials in other geometric shapes may be considered for poultry defrost indicator device development.

## CLAIMS

- (1) According to this invention a prod is produced by choice from a mixture of polymer/monomer materials and thermochromic pigment for insertion into an item of poultry prior to freezing.
- (2) The prod is produced in various lengths to suit various poultry types and sizes and would be inserted from the anal canal up to the intestinal cavity area of the said poultry where the greatest risk of Salmonella contamination may occur.
- (3) Each prod will have an insertion end Ball to make contact with the wall of the intestinal cavity area and unique pattern of prominent flesh contact points at regular or irregular intervals along its length to offer variety for best use.
- (4) The thermochromic pigment selected will show a distinct colour change once the inner temperature of the item of poultry has increased above freezing ie 0 degrees C to a target temperature of 6 degrees C + - 1 degree Centigrade. Other target temperature thermochromic pigments may be selected according to any new or future food safety defrost temperature requirements or potential alternative uses for the said device.
- (5) As the item of poultry defrosts the prod remains inserted within the said item of poultry and is available for removal for time based or regular eyesight inspections to indicate by colour change a full internal defrostation has taken place prior to cooking.
- (6) Convenience and availability will give this poultry defrost indicator device an advantage over both the metallic electronic thermometer prod which is unavailable in most homes and the conventional thermometer which presents additional problems of potential glass breakage to the user and is considered inappropriate and unsafe for the said purpose of use.



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Application No: GB 9622555.2      Examiner: P M Weller  
Claims searched: All claims considered.      Date of search: 17 February 1998

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.P): G1D

Int Cl (Ed.6): G01K 11/12 11/14 11/16 11/18

Other: NONE

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2244132 A LIQUID CRYSTAL - FIG 1	All
X	GB 1514809 RPR - ALL FIGS	All
X	GB 1240432 DUN-RITE - ALL FIGS	All
X	GB 1132606 COMMODITY - ALL FIGS	All
X	GB 506550 WILSON - ALL FIGS	All
X	WO 97/26516 A1 HANS - ALL FIGS	All

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.